149: Reinach--220 G-3 (no date) 1901 AM1 Indochina
Laotians AM8

The trees also support incomparable wild orchids with strange flowers, and climbing or twining plants of every possible shape and color which are as graceful as they are delicate, which cross, intertwine and with their lianas form an inextricable jungle, a curtain of flowers, stems and foliage which moves at the whim of the winds and is so thick in certain spots that it casts an almost perpetual shadow (1).

(1) The exact nomenclature of these floral species is almost impossible to establish. We shall content ourselves with noting, among many others which are still unknown: the acacia, and principally the farnèse acacia; various kinds of lilacs; the double and single hibiscus, the African marigold and the zinnias, the lotus, the cockscomb, the marvel of Peru, the sunflower, several kinds of magnolias, syringa, camellias, etc.

Various plants used for food, medicine and dye also grow in the forests, such as yams, taros, ginger, cardamom, annatto, curcuma, catechu (sisèt), Campeachy wood, wild indigo, etc., as well as trees and lianas which produce resins, oil lac, black and red lacquer, damarine (huile de bois), benzoin, wax, gums and rubber.

Rice and maize are cultivated on the plateaus, low hills, mountainsides and in the valleys, as well as on the alluvial deposits of the Mekong. These form the basis of the natives' food supply and are essential elements in the manufacture of alcohol.

The banks of the watercourses, which are covered by inundations every year and constantly fertilized by alluvial deposits, are [305] used for the cultivation of cotton, tobacco, indigo, castor oil plants, batatas, peanuts, manioc and vegetables and fruits such as onions, garlic, tomatoes, squash, melons, fennel, mustard, edible convolvuluses, sensitive d'eau, etc. In the gardens which are cultivated near the banks one also finds sugar cane, coconut palms, sugar palms, betel palms, latania palms, the poivrier bétel, the arborescent mulberry, peppers, coriander, mint, the citronella and [Illustration here] purslane. Here also are a large variety of fruit trees: banana trees (more than twenty-four varieties), cinnamon trees, fig trees, orange trees, tangerine trees, grapefruit trees, lemon trees, lime trees, pineapple trees, pomegranate trees, guava trees, mango trees, papaw trees, ebony trees (Diospyros ebenum), mangosteen trees, jack trees, durian trees, custard-apple trees, avocado trees, litchi trees, sapodilla trees (red balata), fayolliers (légumineuses), silk-cotton trees

245 (bombax and callotropis), tamarind trees, jujube trees, cucumber trees, water chestnuts, etc.

In the north of Laos grow peach trees, plum trees, almond trees, [306] walnut trees, cherry trees, apple trees, pear trees, strawberry plants and medlar trees, the fruits of which are similar in taste to that of their counterparts in Europe, although they are neither as large nor as succulent as the latter.

On the edges of the forest, and sometimes even in the middle, there are also other wild fruit trees reminiscent of the plum tree, the cherry tree, the apple tree (a rose-apple tree with red or green fruits), the fig tree, the quince tree, etc. Their fruits have remained in a wild state or reverted to one because of a lack of adequate care, and are not edible. Their seeds, pits and stones have developed excessively, to the detriment of the pulp which remains tough, bitter or tasteless.

248 Finally, opium poppies, tea, ramie, hemp, etc. are cultivated
249 on the plateaus and in the high valleys.

Most European vegetables grow in Laos, in the gardens of the
241 Europeans. They are seeded at the end of the rainy season. Early varieties can be harvested and a new crop seeded well into July, but care must be taken to cover the beds during downpours, which occur frequently from May on.

The forests of Laos may have two characteristic forms, depending
134 on whether the soil is mountainous and composed of clay or limestone,
137 or else flat or slightly sloped and sandy, rocky or stony. In the first case the soil has a high percentage of vegetable matter, is moist and rich in humus and consequently covered with thick forests (Dong or Pa). In the second case it has a low percentage of vegetable matter, is hot and poor in humus and is covered with light forestation (Khok or Pa-hang).

A table contained in the Appendices (No. XX) gives the nomenclature of some sixty varieties of trees on which we have information. In addition to the trees which we cite, we should also note the bamboos, rattans and banana trees.

There are some twenty varieties of bamboo, in which the stalks vary from the size of the little finger to as much as thirty or even thirty-five centimeters in diameter. They sometimes reach a height
824 of twenty meters. There are six or seven varieties of rattan of different grades and sizes, but they are used only for local needs. Among the many wild banana trees, a few varieties such as the "Kok-Koue-Kene" yield a sort of fiber rather like abaca.

137 [307] Although we are able today to evaluate the forest wealth of Laos approximately and to compute its immense commercial value,

314 Indeed scavenging, that is to say the gathering of forest products, hunting and fishing, is all that is needed besides rice and maize to supply the day to day needs of the native and even provide him with a comparatively important basis for trade.

Forest Products

1. Benzoin (Khab-Niane).

314 824 Benzoin is extracted from the tree called Styrax benzoin, by means of incisions made on the trunk. The benzoin trees (Kok-Khab-Niane) are localized in Upper Tran-Ninh, the south of the Hua-Pahn and the north of the province of Luang-Prabang. They are not cultivated in any way. [563] The resin or gum is harvested at certain times of the year, generally by the Khas, at the foot of the trees and along the trunk, where it coagulates in masses or tears.

Benzoin is collected in its natural state, that is to say in tears of various sizes and in breakages. In the production centers it is separated into three grades: large and medium tears, medium and small tears, and small pieces and breakages. In the transit markets these three grades are sorted and screened and once more divided into six kinds or types, which are: large tears, medium tears, small tears, mixed large, mixed medium, and finally tiny fragments and dust.

[439] A few years ago a chemical process was [329] discovered, it would seem, for extracting certain of the aromatic alkaloids contained in benzoin from coal, and the market value of this product suddenly dropped by more than sixty percent. [435] At the present time, depending on the grade, the market price in Luang-Prabang is from 90 to 115 francs per hundred kilograms (1), in Nong-Khay from 100 to 135

(1) We have deemed it preferable to give the price in francs and per hundred kilograms, since the reader may not be familiar with Laotian weights and currency.

788 francs, and in Korat from 120 to 160 francs.

314 439 Part of the benzoin production is consumed locally in the manufacture of sticks of incense for use in worship. All the rest is exported to Bangkok and from there to Europe. A very small proportion is sent to Tonkin by way of the Black River. Upon its arrival in Bangkok, benzoin from Laos is worth twice as much as in Luang-Prabang.

824 314 ### 2. Crimson lake or stick-lac (Khang-Deng).

This gum is produced by an insect of the "cochineal" type, the

824 ● 314

Coccus lacca, which secretes the lac to envelop its larvae.

In trade it appears in the form of half-cylindrical fragments, in breakage (seed-lac), or else adhering to the branches of the tree on which it formed. The latter is lac on sticks, whence the English name stick-lac by which it is known in Far Eastern trading circles (2).

(2) Lac in its most widespread form--lac in shells (shellac)--is not found in Laos. It can easily be produced by boiling the preceding types in alkaline water.

This product is harvested by scavenging from trees which were seeded long ago and are scattered throughout the brush, and also by regular cultivation from a triennial tree, as will be seen below. The principal varieties of trees on which lac is found are the Ficus, the butées, the Croton, the Mimosa and the Acacia.

There are three kinds of lac: bright-colored lac (which colors a moistened finger) in whole pieces, lac on wood and brown cellular lac in more or less broken fragments. Throughout the country, however, it is sold mixed, and only at the transit markets are the three kinds separated. 314 824 438

[330] The price per hundred kilograms is from 35 to 42 francs at Luang-Prabang, from 45 to 48 francs at Pak-Lay, from 47 to 50 francs at Nong-Khay, 42 francs at Khong and Bassac, 62 francs at Pnom-Penh and Cholen, and from 72 to 85 francs at Korat. [435]

Crimson lake is used for dyeing as well as in the preparation of certain colors and varnishes with an alcohol base. A small proportion remains in the country, but the greater part is exported.

3. Cardamom (Mak-Neng).

Cardamom is the fruit of the plant Ellateria cardamomum which grows in the forests but which may be cultivated, as is the case on the plateau of the Bolovens in Laos and in the region of Pursat in Cambodia. The variety common to all parts of Laos is the great cardamom or bastard cardamom, while that cultivated in Cambodia is the true cardamom or small cardamom, much superior to the first in quality and value. 824 314 [245]

The plant grows best in the humid forests, and is harvested in August or September. The plant has vast numbers of light seeds, and it takes about eighty or a hundred thousand seeds to make up the weight of one "mune" (about twelve kilograms). The price per

[435] The price per hundred kilograms is from 50 to 54 francs in Luang-Prabang, 62 francs in Pak-Lay, from 62 to 70 francs in Nong-Khay, 50 francs in Cammon, from 75 to 83 francs in Song-Khone, from 66 to 87 francs in Saravane, from 70 to 83 francs in Bassac, from 83 to 95 francs in Khong, 58 francs in Attopeu, from 50 to 83 francs in Stung-Treng, 133 francs in Pnom-Penh, 140 francs in Cholen (1) and from 80 to 120 francs in

(1) At this market cardamom from Pursat brings from 625 to 830 francs per hundred kilograms.

Korat.

4. Cinnamon (Cinnamomum zeylanicum. Kai-Hom in Laotian).

The cinnamon tree must have been cultivated at one time in the territory of Vien-Tiane. Then the inhabitants were driven out as a result of foreign incursions and abandoned their gardens, which were gradually invaded by brush. The harvesting of cinnamon has since become a scavenging operation without any form of cultivation. For several years now, doubtless in consequence of the many requests which were made when the Customs service tried to establish a monopoly of this product in Annam, [331] [Illustration] [332] [Blank page] [333] the inhabitants have once more begun to maintain the cinnamon trees and to give them some attention. Plantations have even been started, and this propitious initiative should be encouraged.

5. Indigo (Kok-Kam and Kok-Hom, depending on whether the Indigofera tinctoria or the Indigofera anil is designated).

These two plants are not always scavenging products, since the greater part of Laotian indigo comes from crops grown on the banks of the Mekong and its chief tributaries.

There is also an indigo-bearing liana which grows wild. The Laotians call this "Bouok-Khua".

In Laos the preparation of indigo is extremely simple. The fresh leaves and stalks of the different varieties of indigo plants are put to soak in wooden vats containing water and an acid element, usually the acid of lemons or limes. After a certain time the leaves are removed, then lime is precipitated in the water and the mixture is violently stirred. The lime fixes the dye and is deposited at the bottom of the vats, which are exposed to the air. When the clear water which rises to the surface has been completely evaporated, a hardened mass which is the indigo is left at the bottom of the vat. This product is not exported, but serves only for local consumption. Its price varies between 12 and 15 francs per hundred kilograms.

Its price varies between 12 and 15 francs per hundred kilograms.

6. Catechu (Sisiet).

Catechu is produced from a decoction of the bark of two varieties of trees, the catechu acacia and the leafy butée.

This product, which is used in making the national masticatory together with betel, betel nuts and lime, is consumed, in the large centers of Upper Laos, in the form of a dry residue obtained from a decoction of the bark. Generally, however, it is the bark itself which is consumed after it has been broken up into small pieces.

Natural sisiet takes the form of shreds of bark about a cubit (.45 meter) long by four centimeters wide and one centimeter thick. The shreds are tied together in packs of twenty-five or fifty, depending on the region.

The whole production is consumed locally. The natives [334] go into the forest at points where suitable trees are to be found, bundle up the pieces and load them on great rafts which go down from Pak-Lay and Vien-Tiane to Bassac and even to Khong.

At Pak-Lay sisiet is worth only 7 francs and 50 centimes per hundred pieces, but it naturally costs more the further away one goes from the centers of production.

7. Curcuma (Khi-Mine).

This plant, of the Zingiberaceae family, has a rhizome which contains an orange-yellow coloring matter used for dyeing silk and cotton.

Sometimes the inhabitants (chiefly the women and children) rub their whole body with curcuma scrapings after a bath. The application of curcuma to the wet skin, which acquires a light yellow color, is said by the natives to ward off mosquitoes and keep the skin fresh.

Up to the present time this product has not formed the basis of any foreign trade. It is sold in small amounts on the markets of Laos.

8. Ginger.

The ginger which is called "Mak-Khing" in Laotian is the Zingiber officinale or gray ginger. Used as a condiment by the entire population, this product does not enter into trade. Its price varies between 12 francs and fifty centimes and 16 francs and fifty centimes per hundred kilograms.

9. Roucou.

The roucou, or fruit of the Roucouyer Bixia, is called "Kane-Mak-Soum-Phou" in Laotian. Literally, this means Seed of an acidulous mountain fruit. It is used to make red and orange dyes

314 when mixed with curcuma. The trees are found in the forest, and
386 sometimes in gardens.

10. Yams.

The yam is an edible tubercle of the Dioscorea family. It is
262 represented by two varieties, the white and the black, which are called
241 "Mane-Phuek-Khao" and "Mane-Phuek-Dam" in Laotian. These tubercles are the main standby when there is a scarcity of rice and [335] maize, but in ordinary times they are used only to supplement the usual diet.

11. Taro or cush-cush (Mane-Pa).

Taro is also a food plant of the Aroïdées caladiées genus (Caladium esculentum). Like the yam, it is one of the most useful edible tubercles in times of famine.

12. Medicinal plants.

824 Designated by the generic name "Ya" in Laotian, these plants
278 are represented by special types of orchids, roots, bark, berries, leaves and even pieces of wood of different kinds, the whole forming an assortment of medicaments.

[438] The Khas are the ones who collect these various products from the depths of the forests, and they trade them either to Chinese or to Laotians for money or other goods.

[435] Certain of these plants and barks are used by the Laotians while others, such as the leaves from orchid plants, for example, are purchased by Chinese merchants at prices which vary between 33 and 62 francs per hundred kilograms.

13. Cloves.

The clove tree (Caryophyllus aromaticus. Kane-Phou in Laotian) is quite scarce in Laos. Cloves are mixed with various ingredients in masticatories or are taken as medicine.

Cultivation of the clove tree ought to be developed in Laos because of the high value of its flowers which, when dried on the tree, constitute the cloves of commerce.

14. Beeswax (Phung).

222 Beeswax is much sought-after in Laos, where a great deal of it is
[231] consumed. It is a scavenging product par excellence since, except in the Sib-Song-Pahn-Na, the inhabitants do not practice apiculture and
314 are content to go into the forest and look for honeycombs in order to extract the wax. The latter is used for domestic needs and for worship
[438] ceremonies. It also forms the basis of quite an important trade.

313 "There are several kinds of bamboo. The large bamboo which is used to make boxes and floats is called mai-bane. The mai-tot is the male bamboo, [340] strong and slender, with its joints closer together. When provided with an iron point it is used for poling boats along in the rivers. The mai-an is the female bamboo, hollower and lighter, from which raft coverings and partition mats are made. It is the kind used to make kelates" (1).

[113] (1) Revue des Deux Mondes. "A travers l'Indo-Chine. Le Haut Laos et le Mékong," by Mme Isabelle Massieu, August 1, 1900.

314 17. Rubber.

Rubber is called "Niang-Niut" in Laotian, which means, literally, elastic gum.

•824 There are several plant varieties in Laos which supply a latex which becomes elastic after coagulation. Certain types of the ficus family, doubtless of the elastica genus, yield rubber of comparatively good quality. The plants which produce the most latex and that of the best quality, however, are lianas whose scientific nature has not yet been settled.

More than ten different kinds of rubber lianas are known. The Laotians call these "Khua-Mak-Niang, Khua-Hai, Khua-Niut-Niai, Khua-Mak-Som, Khua-Mak-Katong-Katiou, Khua-Khao-Pong, Khua-Lam-Sai, Khua-Tang-Tong, Khua-Som-Lam, Khua-Mak-Ka-Khay, Khua-Mak-Khao-Ngoua," etc.

It is quite certain that these diverse names do not refer to as many species which are dissimilar from the botanical point of view, but are merely different local terms used at widely separated points in order to designate the same lianas. Without any concern for their chief virtue, which is to supply latex rubber, the Laotians have named them for their appearance, the shape or type of their fruit, etc.

It seems likely that the varieties which we have just enumerated may be reduced to seven and perhaps less. We shall not be able to tell for sure until we have examined the stalks, leaves, flowers and fruits of the various species in a laboratory. The liana which is most widespread in Laos is the one bearing the name Khua-Mak-Khao-Ngoua or liana with fruits like buffalo horns. It is also called Khua-Mak-Som or liana with acid fruits. The latex is collected twice [341] each year, once in June or July (rainy season), and again in October or November (dry season). The first harvest yields only second grade rubber which is black and sticky. The second crop, which is less

314 plentiful by half than the first, yields a clear, sinewy, dry and elastic
824 rubber in threads and sheets.

Rubber from the second harvest has been submitted to competent individuals for examination, and it seems that it would bring a price of 8 to 10 francs per kilogram on the European market.

435 In April 1900 the purchase price of this product per hundred kilo-
314 grams was 137 francs in Vien-Tiane, from 166 to 208 francs in Muong-Son, 290 francs in Cho-Bo (Tonkin) and 550 francs in Vinh (Annam). Its resale price was 625 francs in Saigon, 700 francs in Singapore and from 800 to 1000 francs in Europe (1).

(1) This refers only to first grade rubber.

These figures suffice to show that Laotian rubber is a choice product in high demand, and a first-rate trade commodity holding the promise of sizeable profits.

439 The total amount of rubber exported from Laos in 1899 through
314 the ports of Tonkin, Annam and Cochinchina is estimated at some fifty tons. For 1900 the figure would appear to be about eight times larger (2). This trade has only developed in Laos in the last two or

(2) See Appendix XXII.

three years, but now that the initial impulse has been given and the people are beginning to harvest the latex which they used to scorn because there were no outlets for it, the traffic will not cease to increase from one year to the next, since rubber finds an increasing demand on the European market.

Although the lianas are extremely plentiful in the Laotian forests, care should now be taken to spare them as they are exploited and to increase the number of plants so as to avoid any shortages in the future.

314 18. Pine resin (Khi-Kok-Phek or Niang-Phek)

Pine resin is used in Laos only when mixed with crimson lake. It is used for making a varnish and certain mastic compounds. It has a very low value, never more than 20 francs per hundred kilograms and [342] sometimes as low as 6 francs. None of this product is exported. It would be easy to introduce the regular cultivation of pines and the harvesting of their resin into the land, if sufficiently remunerative outlets were opened up.

138
•824

APPENDIX XX TABLE OF TREES

Laotian Name	Other names	Height in meters	Size (diameter) in meters	Uses	Subject to attack by insects	Habitat	Provinces	Observations
				A. RESINOUS TREES				
Mai-niang	Cai-dau-nuoc (Annamite) Dom-teal (Cambodian) Dipterocarpus alata	30 to 35	.6 to 1	Furniture, boards, framing; yields an oleoresin used to make torches and a mastic for caulking pirogues. Can yield about 20 liters of essential oil per year.	Yes	Thick forest	Lower Laos	Soft wood, yellowish in color, easily worked. Very common and well known to all Laotians. Lasts about 6 to 10 years, but can be preserved in dry, well-aired places.
Mai-sat	Dipterocarpus (?)	20 to 30	.6 to .8	Boards and ordinary traverse beams. Its oil is used in making torches.	Yes	Forest glades	Lower Laos	Soft wood, reddish-gray in color, of inferior quality. Very plentiful and well-grown; lasts 5 to 6 years, rots in earth.
Mai-sang	Cai-sao (Annamite) Dom-papel (Cambodian) Hopea odorata	20 to 25	1 to 1.5	Boards and timbers. Could yield about 20 kilograms of a good resin per year.	No	Forest glades	Lower Laos	Softwood, brown, easy to work; very plentiful; average lasting qualities; resembles the ash; well-grown tree.

[Table continued over]

149: Reinach--400 G-3 (no date) 1901 AMI Indochina
Laotians AM8

137
824

Mai-khoun		20 to 25	.8 to 1	Useless for cabinet work. The Laotians cut it into small pieces like the Mai-seng-kham for chewing with betel. Its oil is used for caulking pirogues and making torches.	No	Forest glades	Lower Laos Upper Laos	Very hard wood, dark red in color. Has often been mistaken for teak. Very plentiful, together with the Mai-tabeng it makes up the greater part of varieties in forest glades; unlimited life.
Mai-chik	Cai-chai (Annamite)	15	.4 to .5	Widely used for house columns. It yields 20 kilograms per year of a resin used by the Laotians for caulking.	No	Forest glades	Lower Laos Upper Laos	Hardwood, veined yellow in color, fine grain. Very plentiful. Unlimited life.

(1) It is essential to note that these trees can be used only if the sapwood is removed and only the heartwood used.

[112-113] Mai-tabeng	Cai-dau-taben (?) (Annamite) Dom-trac (?) (Cambodian) Dipterocarpus species (?)	30	.5	Little used in building. Passable boards and columns. Can yield some 20 liters of oil annually which is used for making torches and caulking pirogues.	No	Forest glades	Lower Laos	Fairly hard and resistant wood, reddish in color. Very plentiful. Long life. Resembles the Mai-niang, keeps better.
Mai-phek	Cai-thong (Annamite) Dom-sral (Cambodian) Pinaster	30 to 35	1 to 1.5	Various uses. Yields a whitish odorous resin which, when mixed with sticklac, produces varnish and certain mastics.	No	Plateaus and clear parts of forests	Upper Laos	Reddish wood with coarse fiber. Floats. Said to be inferior to other resinous varieties.

[table continued over]

137
• 824
322

Mai-nam-kieng	Cai-gon (Annamite) Dom-crul (Cambodian) Melanorrhea laccifera (varnish-tree)			Yields a fine black varnish similar to lacquer. Would be suitable for cabinet work.			Lower Laos	Red wood, reminiscent of Brazilian rosewood. Very rare. Does not last under moist conditions.

B. TREES WITH WOOD SUITABLE FOR CABINET WORK

Mai-Miompha	Mock mahogany	30	.6 to .7	Furniture, boards. Resembles the mahogany of Florida or Texas, used for cigar boxes.	Yes	Valleys and banks of water-courses	Lower Laos Upper Laos	Very beautiful soft-wood, pink in color. Fairly plentiful. Floats.
Mai-pousi or Mai-pousi-kien	Cai-bang-lang (Annamite) Lagerstroemia (?)	30	.6 to 1	Furniture, fine boards.	Yes	Thick forest	Lower Laos	White wood with slight gray tinge, not very resistant, fine grain. Very plentiful. Lasts about ten years, does not withstand rain.
Mai-thon	Cai-lin (Annamite) Mock walnut	30	.5 to .6	Boards, fine cabinet work.	Yes	Valleys and banks of water-courses	Lower Laos Upper Laos	Very beautiful brown wood, veined like the walnut which it resembles although darker. Very long life. Very plentiful. Very well-grown tree.

[Table continued over]

137
824
322

Mai-kha-niom	Cai-trat (Annamite)	15 to 25	.5 to .6	Furniture, boards, piroguss.	No	Forest glades	Lower Laos	Resistant wood, slightly yellowish, fine grain, quite light, well-grown. Rather scarce. The tree bears very odoriferous yellow flowers.
Mai-lang-dam	Cai-mun (Annamite) Don-hayaan (Cambodian) Diospyros ebenum Ebony	10 to 15	.3 to .4	Good for cabinet work. House traverse beams. Its fruit is used to make a black dye.	No	Thick forest	Lower Laos	Hardwood, black, heavy, non-floating, small, resembles ebony. Lasts about seven years. Plentiful.
[114-115]								
Mai-deng	Cai-buong (Annamite)	25	.6 to .7	Columns and posts for houses and pagodas. Furniture.	No	Forest glades	Lower Laos	Resistant, red, very well-veined wood. Highly esteemed, hard, difficult to work. Resembles rosewood somewhat. Very well-grown tree, well-known to the Laotians, plentiful.
Mai-te	Cai-go (Annamite) Grandifera cochinchinensis	30 to 50	.6 to .7	Columns for houses and pagodas. Boards.	No	Forest glades	Lower Laos	Very hard wood, mahogany yellow, fine grain. Unlimited life. Plentiful. Edible fruit.

[table continued over]

137
.884
322

Mai-dou or Mai-dou-khao	Cai-hoi-moc (Annamite)	30	.7 to .8	House columns, furniture, chests, cart axles.	No	Thick forest	Lower Laos Upper Laos	Beautiful, very hard wood, slightly reddish, very well-veined; reminiscent of the thuja. Quite hard to work. Unlimited life. Plentiful.
Mai-pen-sat		20 to 35	.8	Very fine planks and columns.	No	Valleys and banks of water-courses	Lower Laos	Very hard wood, difficult to work.
Mai-khen-hin	Cai-sac-da (Annamite) Noreo (?)	30	.4	Very fine columns and traverse beams.	No	Thick Forest	Lower Laos	Very beautiful, very hard wood, highly resistant, yellowish in color, very heavy. Life would be unlimited. Plentiful.
Mai-ei	Dom-kmor-prey (Cambodian) Naucles orientalis (?) Jack-tree	10	.4	Columns, furniture and boxes. The bark is used for dyeing bonzes' clothing yellow.	No	Valleys and banks of water-courses	Lower Laos Upper Laos	Very pretty light wood, yellowish in color. Quite easy to work. Floats when dry. Noted especially for its fruit.
Mai-bok-khai			.9 to 1	Not used by the Laotians, the grain being too hard for their tools. Ought to make fine boards.		Forest glades	Lower Laos	Hardwood, whitish-yellow in color. Very well-grown. Plentiful.

[table continued over]

137
•824
322

Mai-khe-nioung	Cai-trac (Annamite) Dom-cranhung (Cambodian) Dalbergia (?)	15 to 20	.5 to .6	Used for cart axles and in the wheelwright's trade. Would be a good wood for cabinet work.	No	Thick forest	Lower Laos Upper Laos	Very hard wood, dark red veined with black, like the Brasilian rosewood. Unlimited life. Rather scarce. Respected by the Laotians because almost impossible to work with their tools.
Mai-pouai-lai	Cai-bang-lang (Annamite) Lagerstroemia (?)	30 to 40	1.5	Interior woodwork, furniture.	No	Low mountains, valleys	Upper Laos	Beautiful hardwood, gray with wavy veins like the maple. Medium in color between the ash and the beech. Difficult to work, gives a striking effect under varnish.
Mai-kan-laong		17 to 18	.6	Furniture and framing. Very good for woodworking.	No	Beside water	Upper Laos	Hardwood, yellow, good grain, easy to work.
Mai-som		16 to 17	.3 to .4	Furniture and framing.	No	Beside water	Upper Laos	White wood, straight grain, easy to work, quite plentiful.
[116-117]								
Mai-kha		24 to 25	.4 to .5	Furniture, framing, posts.	No	Large forests	Upper Laos	Hardwood, red heartwood; difficult to work; plentiful.
Mai-ka-bok	Dom-kaka (?) (Cambodian) Sindora sumatrana (?)	18 to 19	.3 to .4	Used for turned pieces and long-lasting items.	No	Same	Upper Laos	Hardwood, brown with reddish reflections, fairly easy to work; very beautiful when polished.

[table continued over]

137
.8Q4
332

Mai-sak	Dom-smyaac (?) (Cambodian) Tectona grandis Teak	30 to 40	.8 to 1.2	Framing, woodworking, cabinet work, boatbuilding.	No	Mountainsides and valleys	Upper Laos	Easy to work, reddish beautiful close grain, very well-grown, rotproof, floating. Edible fruit; sometimes replaces the betel nut in the betel masticatory.
Mai-khao-khvai				Excellent posts	No	Hillsides and valleys. Thick forests.	Upper Laos	Hardwood, fine grain, unlimited life.
Mai-tchoueng or Mai-khoueng				Cabinet work.	No	Hillsides and valleys	Upper Laos	Wood which has the perfume of sandalwood. Used to make statues of Buddha.
Mai-dou-deng	Service tree (?)	30 to 35	1.5 to 1.8	Posts, pirogues, tools.	No	Mountainsides and valleys. Thick forest	Upper Laos	Excellent hardwood, with the look and qualities of the service tree, that is to say reddish brown with fine grain. Very well-grown, plentiful, fairly easy to work. Unlimited life.
Mai-sakhem		20 to 25	.5	Posts, framing, boards.	No	Low slopes and valleys	Upper Laos	Good red wood, straight grain, quite scarce, easy to work.

[table continued over]

137
•824
362

149: Reinach-416 G-3 (no date) 1901 AMI Indochina
Laotians AM8

Mai-feme		25 to 30	1.2	Posts	No	Valleys	Upper Laos	Good wood, fairly difficult to work, much sought-after, rather scarce, long life.
Mai-kha-bioung		18 to 20	.25 to .35	Posts, framing.	No	Large Forests	Upper Laos	Hardwood, white, quite difficult to work, quite plentiful.

C. MISCELLANEOUS TREES

Mai-khan-hok		30 to 35		Boards, traverse beams, laths.	No	Thick forest	Lower Laos	Hardwood, white with black heartwood, plentiful on the plateau of the Bolovens; edible fruit.
Mai-khen	Cai-sao (Annamite) Dom-kaki (Cambodian) Hopea spuria (?)	.3 to .4	1 to 1.5	Used mainly in the construction of pirogues.	No	Thick forest	Lower Laos Upper Laos	Semi-hard wood, with beautiful fibers of a yellow color, very well-grown. Water-resistant. Lasts 12 to 15 years.
Mai-hang	Cai-sen (Annamite) Vatica (?)			Columns and mediocre traverse beams.	Yes	Forest glades	Lower Laos	Greatly resembles the Mai-khen-hin, but is neither as resistant nor as highly esteemed; unlimited life.
[118-119] Mai-tab-tao		10	.4 to .6	Mediocre traverse beams, very little used in building.	Yes	Forest glades	Lower Laos	Soft wood, yellowish in color, quite well-grown, little used, quite light; plentiful.

[table continued over]

137
•824
322

Mai-tiou		12	.5 to .6	Same as above.	Yes	Forest glades	Lower Laos	Very soft wood, white, slightly grayish, of inferior quality, cannot withstand rain; fine grain; well-grown tree. Lasts about 7 years.
Mai-khung		15	.6 to .8	Boards and traverse beams. The dried leaves are used to make pirogue roofs and partitions for Laotian houses.	Yes	Forest glades	Lower Laos	Fairly hard wood, slightly reddish, well-grown; plentiful.
Mai-kha-thang		25 to 30	.25 to .3	Beams	Yes	Forest glades	Lower Laos	Hardwood, slightly yellowish, plentiful, quite well-grown.
Mai-tong		35	.5	Coffin planks.	Yes	Forest glades	Lower Laos	Softwood, white, acid fruit; plentiful.
Mai-keng-seng		15	.6	Planks, studs for partition walls and doors.	Yes	Valleys and banks of water-courses	Lower Laos	Softwood, heartwood dark red; plentiful in the valleys.
Mai-man-pa		15	.25	House columns.	No	Thick forest	Lower Laos	Hard and resistant wood, grayish-yellow, fairly easy to work; plentiful, unlimited life.
Mai-hat	Cai-xoai (Annamite)	25	.4	Wooden bells, mediocre traverse beams and columns; little used in building.	No	Valleys and banks of water-courses	Lower Laos	Rather unresistant, yellowish-white wood; plentiful, unlimited life.

[table continued over]

137
•824
322

Mai-mok	.2 to .25			Forest glades	Lower Laos	Slightly yellowish wood, light, with fine grain; dwarf tree, bears large yellow flowers which are very odoriferous.
Mai-seng-kham	.5 to .6	Bark used by the Laotians for chewing with betel.		Forest glades	Upper Laos Lower Laos	Yellowish wood with quite fine grain; well-grown tree; not very plentiful.
Mai-si	.3 to .4			Forest glades	Lower Laos	Slightly grayish wood, quite close-fibered; well-grown tree; not very plentiful.
Mai-lieng	.6 to .7	Used only for making plowshares.	No	Thick forest	Lower Laos Upper Laos	Hard, knotty, red, rather dark wood; difficult to work with an ax, does not grow straight; not very plentiful; unlimited life.
Mai-souek	.6 to .7		No	Thick forest	Lower Laos	Very hard wood, very dark reddish-gray in color, well-veined, difficult to work; very well-grown tree.
[120-121]						
Mai-lam-sing	1 to 1.2		No	Valleys and banks of water-courses	Lower Laos	Hardwood, dark red, close-grained, difficult to work; well-grown tree; quite plentiful.

[table continued over]

137
•824
302

Mai-seng	Dom-khleng-cong (Cambodian) Strychnos nux-vomica		.5 to .6	Its wood, roots and leaves, with the exception of the pulp of its fruit, are used as a remedy against fever and snake bite.	No	Valleys and banks of water-courses	Lower Laos	Very hard wood, slightly whitish, difficult to work; well-grown tree, its seed is the nux vomica; not very plentiful.
Mai-som-hong		20 to 25	.9 to 1		No	Valleys and banks of water-courses	Lower Laos	Slightly grayish wood, difficult to work, cannot withstand rain; well-grown tree; not very plentiful.
Mai-lek	Vap (Annamite) Morus ferrea (?)	20 to 25	.6 to .9	Railway ties. Piles for wharfs.	No	Thick forest	Lower Laos	Ironwood, very hard, mahogany in color.
Mai-thom-da		20 to 25	.6 to .8		No	Thick forest	Lower Laos	Very tall tree with blond heartwood. It is sought-after by the bonzes, who use it to make statues.
Mai-khao		18 to 20	.5 to .6	Boards, framing.	Yes	Thick forest	Lower Laos	White wood of inferior quality; lasts about five years.
Mai-sipu	Cai-gon (Annamite) Dom-cor (Cambodian) Bombax and Calletropsis Mock cotton	15 to 20	.6 to .8	Not used as wood.	Yes	Banks of water-courses	Lower Laos	Quite unresistant wood. The tree yields cotton of excellent quality. It grows rapidly, and is very common.

[table continued over]

149: Reinach--420 G-3 (no date) 1901 AMI Indochina Laotians AM8

137 •84 322

Mai-padoung		20 to 25	.8 to 1	Paneling.	No	Thick forest	Lower Laos	Beautiful wood, purplish-red heartwood, blackens upon exposure to air.
Mai-ka-sau		25	1	Building wood.	No		Lower Laos	Hard and resistant wood, resembles the Mai-tabeng; plentiful; unlimited life.
Mai-bi-sui		18 to 20	.6 to .8	Framing.	Yes		Lower Laos	Wood of inferior quality, hard but not very resistant, red in color; lasts from 6 to 10 years.
Mai-khai-so		18 to 20	.6 to .8	Framing.	Yes		Lower Laos	Wood of inferior quality, hard but not very resistant, red in color; lasts for seven years.
Mai-nga-loi		15 to 18	.5 to .6	Interior woodwork.	Yes		Lower Laos	White wood, of inferior quality; lasts for 5 to 6 years.
Mai-sisiet	Catechu Acacia catechu	30	1.3	The bark alone, which forms catechu, is used for chewing with betel.	Yes	Valleys and low slopes	Upper Laos	The wood is good only for burning.
[122-123] Mai-kok-se		8	.25 to .35	The bark alone is used in making a very resistant paper.	Yes	Valleys	Upper Laos	
Mai-so		30	1.5	Framing and mediocre woodwork.	No	Low mountains and valleys	Upper Laos	Hard wood, fairly good, very light; not very plentiful.

[table continued over]

137
•824
322

Mai-hiene		30	.8	Framing, posts, mediocre woodwork.	Only after ten years	Low slopes and valleys	Upper Laos	Good wood, straight grain; not very plentiful; very straight tree.
Mai-ka-kalang		25 to 30	.5 to .6	Posts and framing.	Yes	Low slopes and valleys	Upper Laos	Soft, reddish wood, easy to work; plentiful.
Mai-ea-ka		14 to 15	25 to 30	Used to make charcoal. Also used for short-lived projects.	Yes	Low slopes and valleys	Upper Laos	Softwood, white, good grain; plentiful.
Mai-li				Posts and columns			Upper Laos	Very hard wood, difficult to work.